

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1 – 19 (Cancelled)

20. (New) A proton acceptance type gas sensor, comprising an organic compound containing an introduced heterocycle comprising a nitrogen atom, and a protonation catalyst in an islands-type arrangement, wherein the organic compound and the protonation catalyst contact each other, and a change in electrical resistivity, photoconductivity, or optical absorption band for the organic compound accompanies proton addition to the organic compound.

21. (New) The proton acceptance type gas sensor according to claim 20, wherein at least one pair of electrodes is positioned in contact with a film of the organic compound, and a change in electrical resistivity or photoconductivity is detected.

22. (New) The proton acceptance type gas sensor according to claim 20, which is an element in which at least one pair of comb-shaped electrodes is positioned in an opposing arrangement on top of a substrate, a film of the organic compound is disposed thereon, and either a protonation catalyst contacts one surface or both surfaces of the film of the organic compound, or a protonation catalyst is distributed through the film of the organic compound, wherein the sensor is an electrical resistance-mode sensor that detects changes in electrical resistivity between the electrodes.

23. (New) The proton acceptance type gas sensor according to claim 20, having a field-effect transistor structure in which a n⁺-Si substrate functions as a gate, source and drain electrodes are formed on top of the substrate with a silicon oxide insulating film disposed therebetween, and a film of the organic compound is formed on top of the silicon oxide and the electrodes.

24. (New) The proton acceptance type gas sensor according to claim 20, wherein a film of an organic pigment that acts as a sensitivity promoter is layered to either one surface or both surfaces of a film of the organic compound.

25. (New) The proton acceptance type gas sensor according to claim 20, wherein the heterocycle comprising a nitrogen atom is a pyridine-based heterocycle.

26. (New) The proton acceptance type gas sensor according to claim 20, wherein the organic compound is an organic pigment containing an introduced heterocycle comprising a nitrogen atom.

27. (New) The proton acceptance type gas sensor according to claim 26, wherein the organic pigment is a pyrrolo-pyrrole, quinacridone, indigo, phthalocyanine, anthraquinone, indanthrone, anthanthrone, perylene, pyrazolone, perinone, isoindolinone, isoindoline, dioxazine, or a derivative thereof.

28. (New) A proton acceptance type gas sensor, in which protons are brought into contact with an organic compound containing an introduced heterocycle comprising a nitrogen atom, and a change in electrical resistivity, photoconductivity, or optical absorption band for the organic compound that accompanies proton addition is detected, wherein the organic compound is an organic pigment containing an introduced heterocycle comprising a nitrogen atom, and the organic pigment is a quinacridone, indigo, phthalocyanine, anthraquinone, indanthrone, anthanthrone, perylene, pyrazolone, perinone, isoindolinone, isoindoline, dioxazine, or a derivative thereof.

29. (New) The proton acceptance type gas sensor according to claim 28, wherein the heterocycle comprising a nitrogen atom is a pyridine-based heterocycle.